

COMPOSITE PAVEMENT EXPERIMENTS IN ROMANIA

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•TO ADD to the information on the performance of composite pavements and overlays, I would like to report on 2 interesting experiments with composite pavements that were done in Romania several years ago.

One of the experiments was organized and led to completion by Laurentiu Nocoara, of the Polytechnic Institute of Timisoara. The structural design of the pavement was made by the author.

The structure of the pavement (from the top to the bottom) was as follows:

<u>Course</u>	<u>Amount</u>
Asphalt concrete surface, cm	7.5 (3 in.)
Crushed-stone base, cm	10.0 (4 in.)
Cement-treated subbase, cm	25.0 (10 in.)
Sand insulation against frost penetration, cm	15.0 to 20.0 (6 to 8 in.)

The surface of the crushed-stone base course was leveled with sand asphalt to retain the stability of the layer. The subbase was made of uniformly graded sand with 8 percent portland cement. The subgrade was a clayey sand ($E = 350 \text{ kgf/cm}^2$ or $E = 4,900 \text{ psi}$).

The expected traffic was 4.5 million or 10.0 metric tons (about 22.0 kips) equivalent axles.

After 3 years of heavy traffic, no cracks were observed at the surface of the pavement, which means that the cracks from the cement-treated base were not transmitted to the top layer. No signs of fatigue appeared although more than 1 million equivalent axles had passed on the highway.

The second experiment was conceived, organized, and lead to completion by Mircea Velica, also of the Polytechnic Institute of Timisoara.

The structure of the pavement (from the top to the bottom) was as follows:

<u>Course</u>	<u>Amount</u>
Asphalt concrete surface, cm	7.5 (3 in.)
Cement concrete base, cm	20.0 to 25.0 (8 to 10 in.)
Sand insulation against frost penetration, cm	10.0 to 20.0 (4 to 8 in.)

The cement concrete base course had no dowels or any kind of bond between the 4-m (13 ft) slabs. The subgrade was either sandy clay ($E = 300 \text{ kgf/cm}^2$ or $4,200 \text{ psi}$) or silty sand ($E = 350$ to 400 kgf/cm^2 or $4,900$ to $5,000 \text{ psi}$).

The joints of the cement concrete slabs were covered with bituminous cardboard (having a width equal to the thickness of the slab on both sides of the joint, without being fastened to the cement concrete slabs) before the asphalt concrete surface course was laid.

After more than 4 years of heavy traffic, no cracks were observed at the surface of the pavement.

Based on these experiments and those discussed in the preceding papers, it should be recognized that composite pavements can be used with great success in highway construction.